



# Science on the Sandy River: Where is all the (Marmot) Dam sediment?

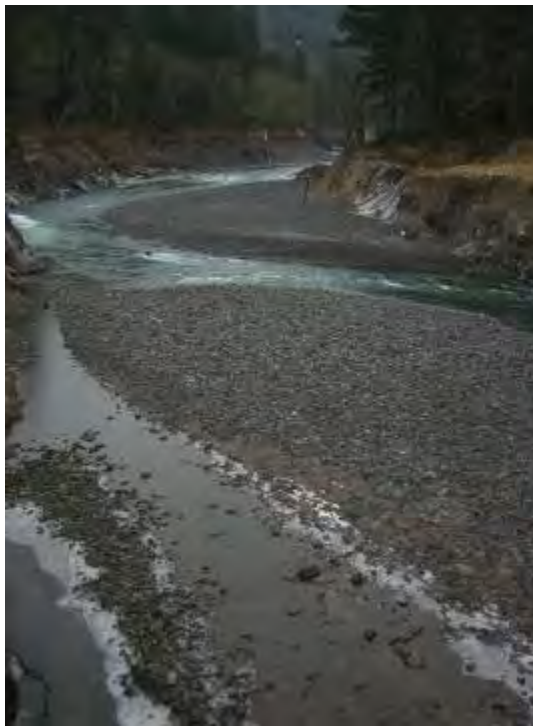
Johns Hopkins University  
National Center for Earth-surface  
Dynamics (NCED)  
Graham Matthews & Associates (GMA)

# Overview

- Introduction
  - Russ Plaeger – Sandy River Basin Watershed Council
  - Dr. Peter Wilcock – Johns Hopkins University
- What's been done before
  - Chuck Podolak – Graduate Student, Johns Hopkins University
- Current Science
  - Goal
  - Where
  - Who
  - How
    - Smokey Pittman – Geomorphologist, GMA
- Our Results
- What's next
- Closing / Questions
  - Bottom Line – What's changed downstream – not much below Revenue, quite a bit above the gorge

# Introduction

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- Dr. Peter Wilcock – Johns Hopkins



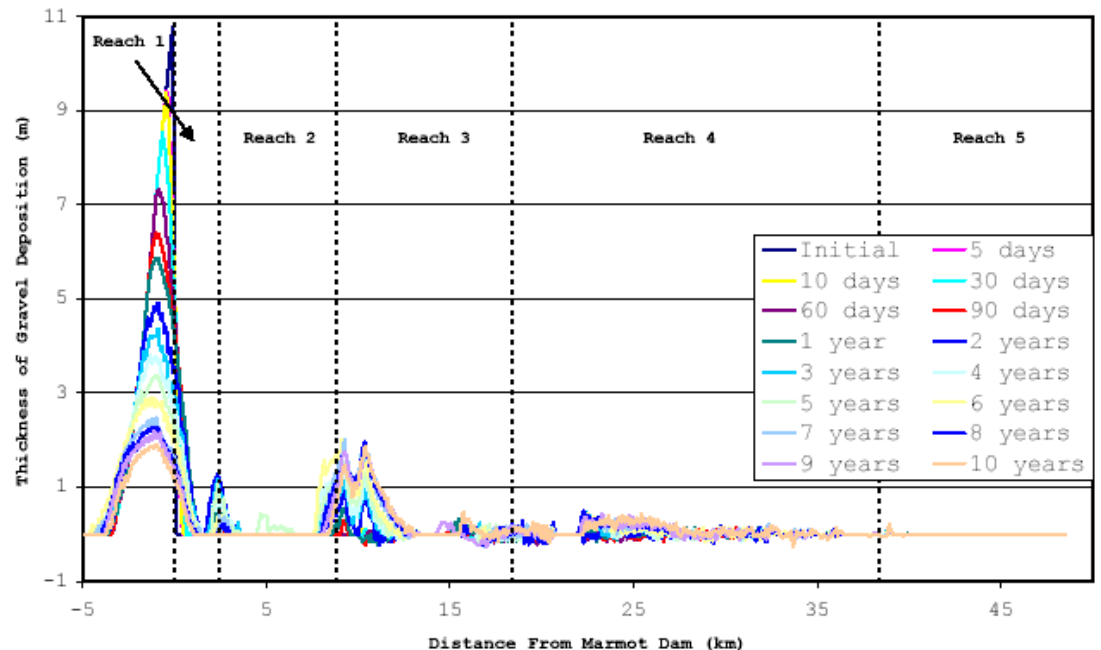
# What are people looking at?

- Goal: Where does the Marmot Dam sediment go, and how does it affect the bed of the Sandy?
  - Why?
    - Pools / Riffles / Eddies = fish habitat & migration paths
    - Pools / Eddies / Bars = recreation spots & boating routes
    - River bed changes can influence flooding patterns

# Previous Work

- Oregon State University / US Forest Service
- Stillwater Sciences / PGE

Figure 13b. Thickness of gravel deposition following removal of Marmot Dam (Alternative B - Run 1: Average hydrology and grain size)



# Current Science

- Who:
  - Johns Hopkins / NCED / GMA / SRBWC
  - USGS
  - OSU
  - Bureau of Reclamation
  - OR Department of Fish and Wildlife
  - Others:
    - Reed
    - Whitman
    - and more...
  - Assisted by:
    - PGE
    - US Forest Service
    - Landowners



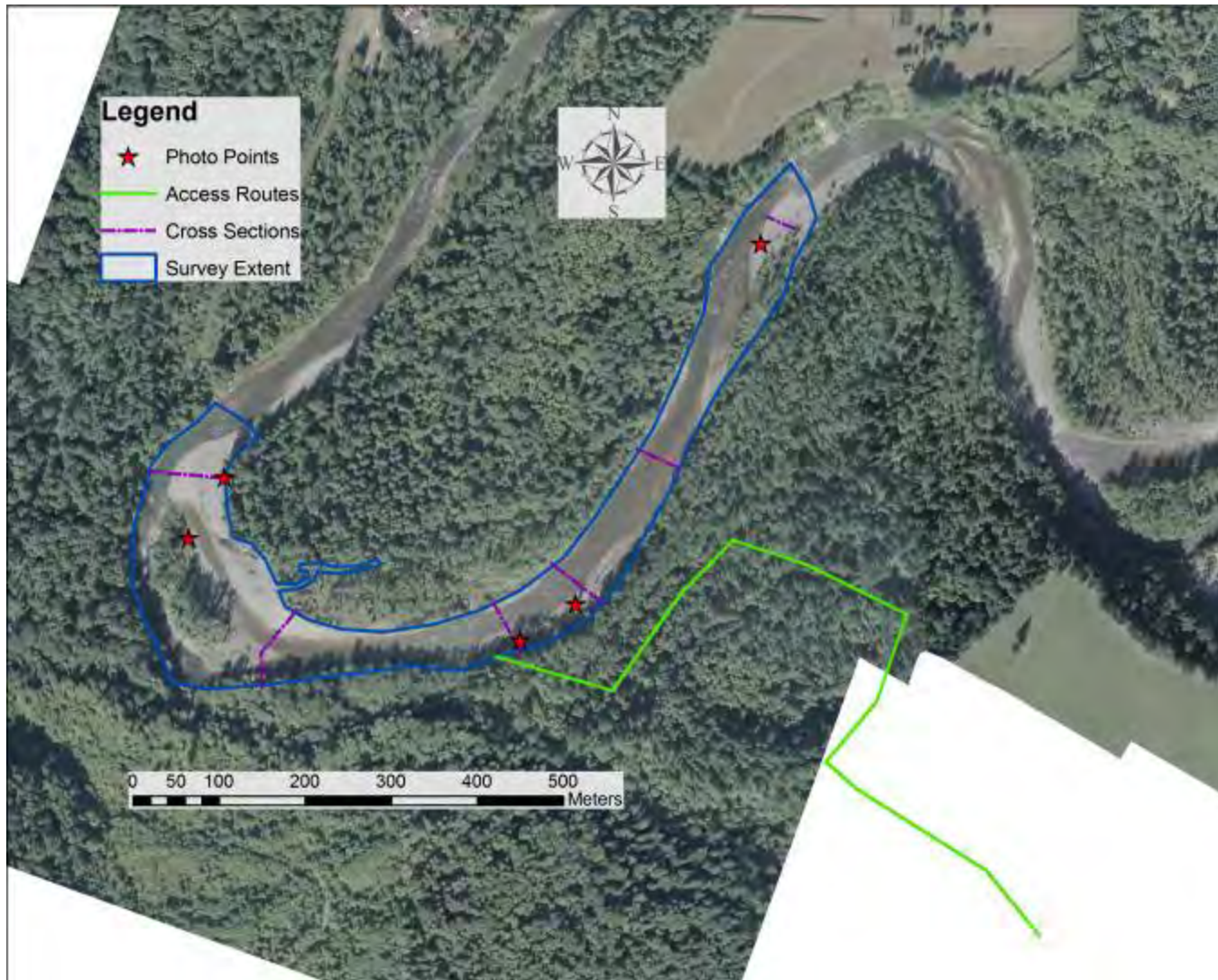
# Current Science

- Where:



# Current Science

- Where: Cedar Creek





# Current Science

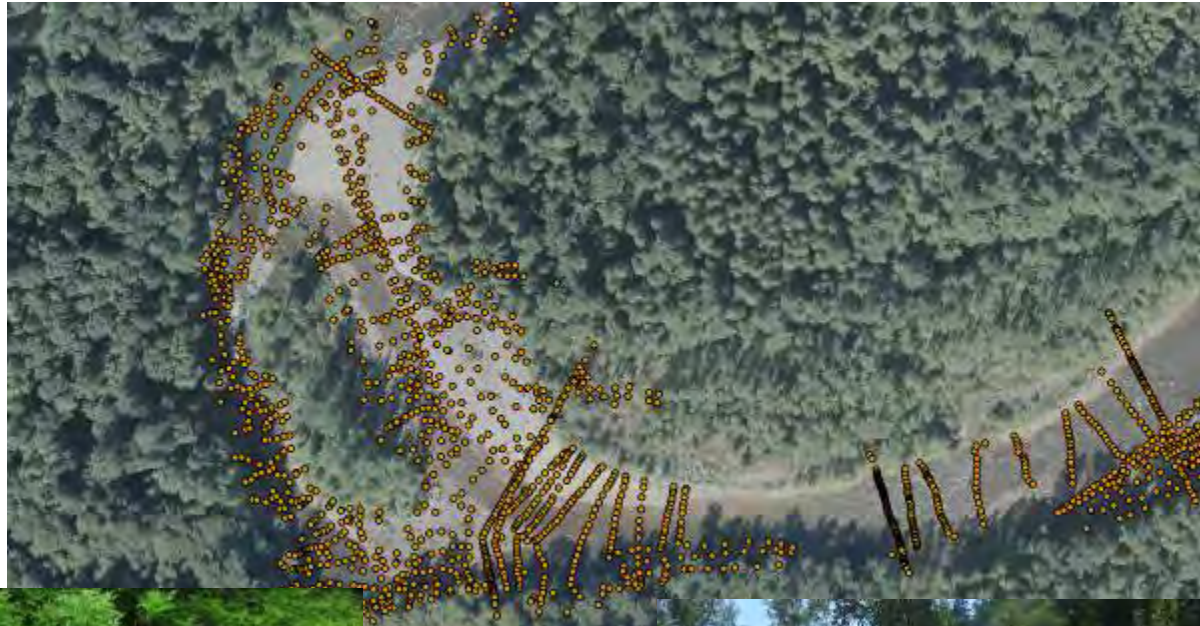
- Where: Oxbow Park





# Current Science

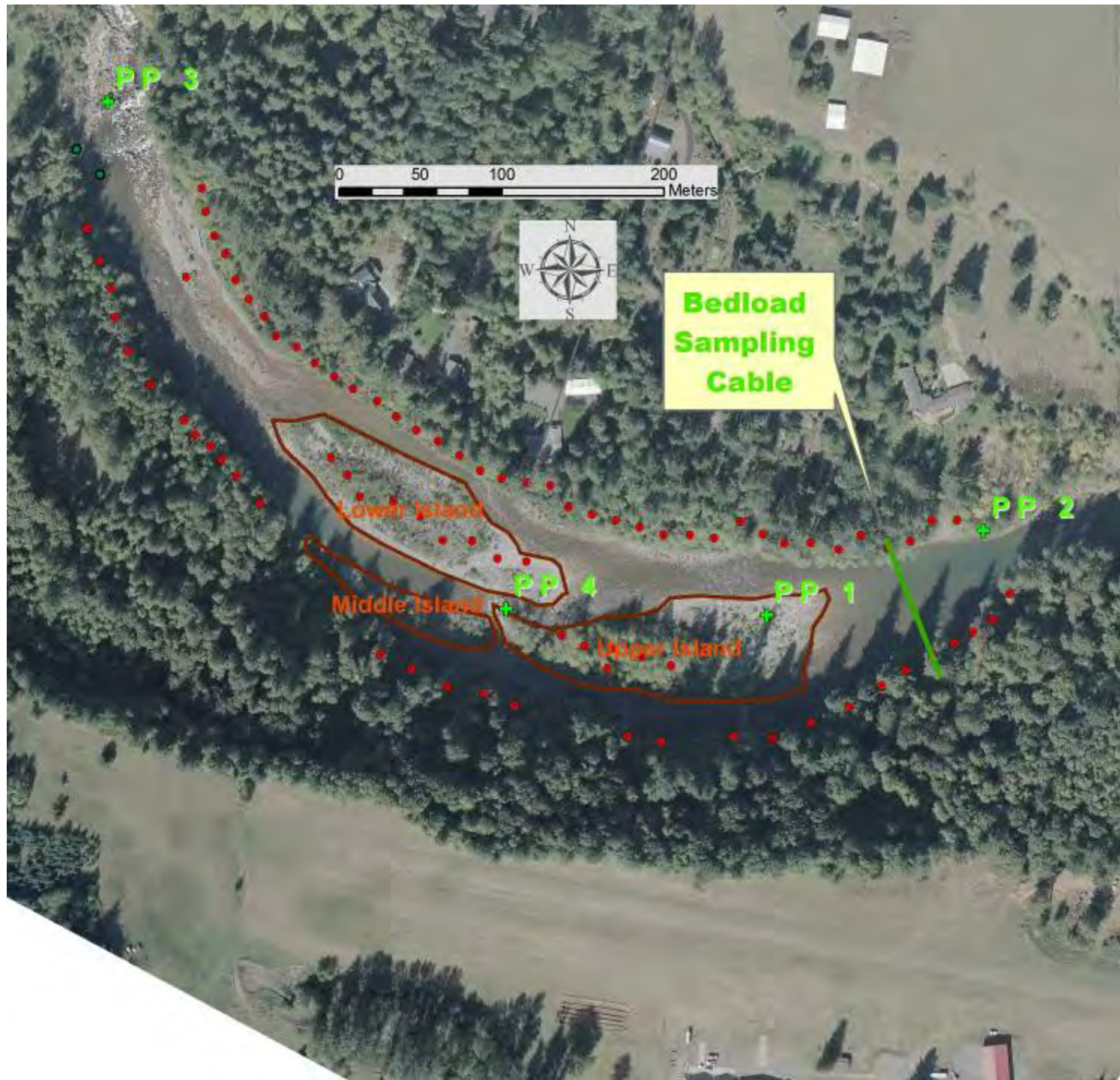
- How:



# Current Science Sediment Sampling

- Smokey Pitman - GMA

















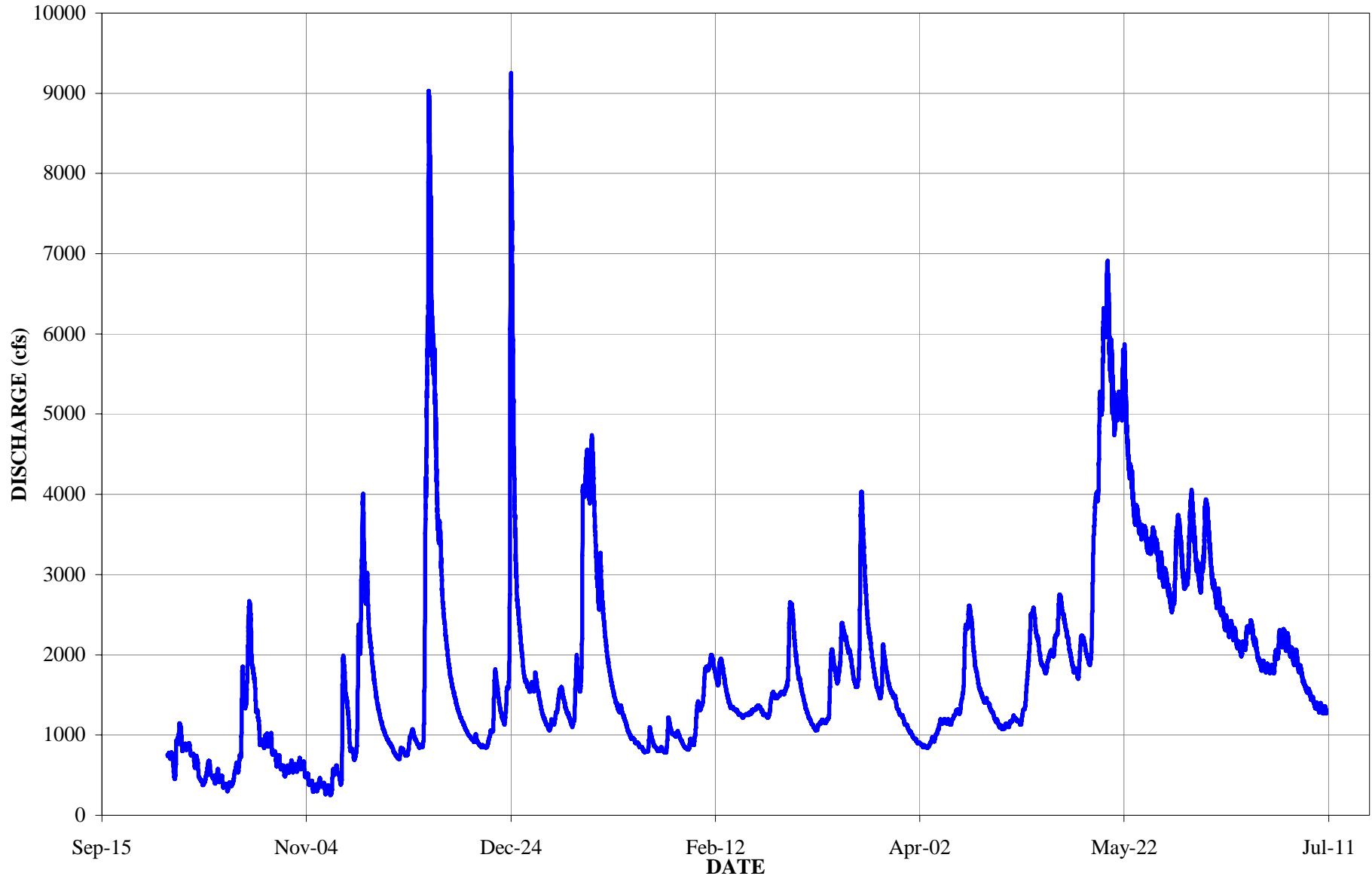




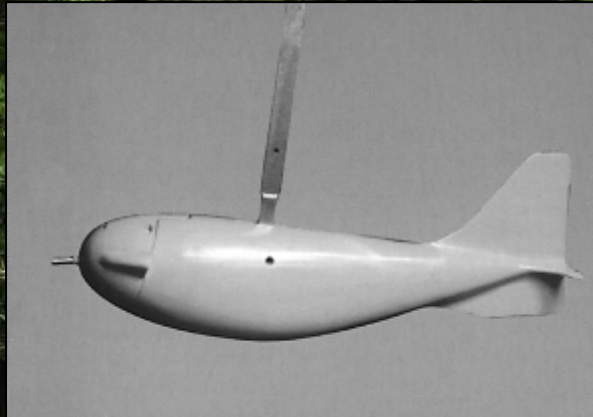




**SANDY RIVER ABOVE REVENUE BRIDGE**  
GMA #14137003 -- WY2008 Discharge



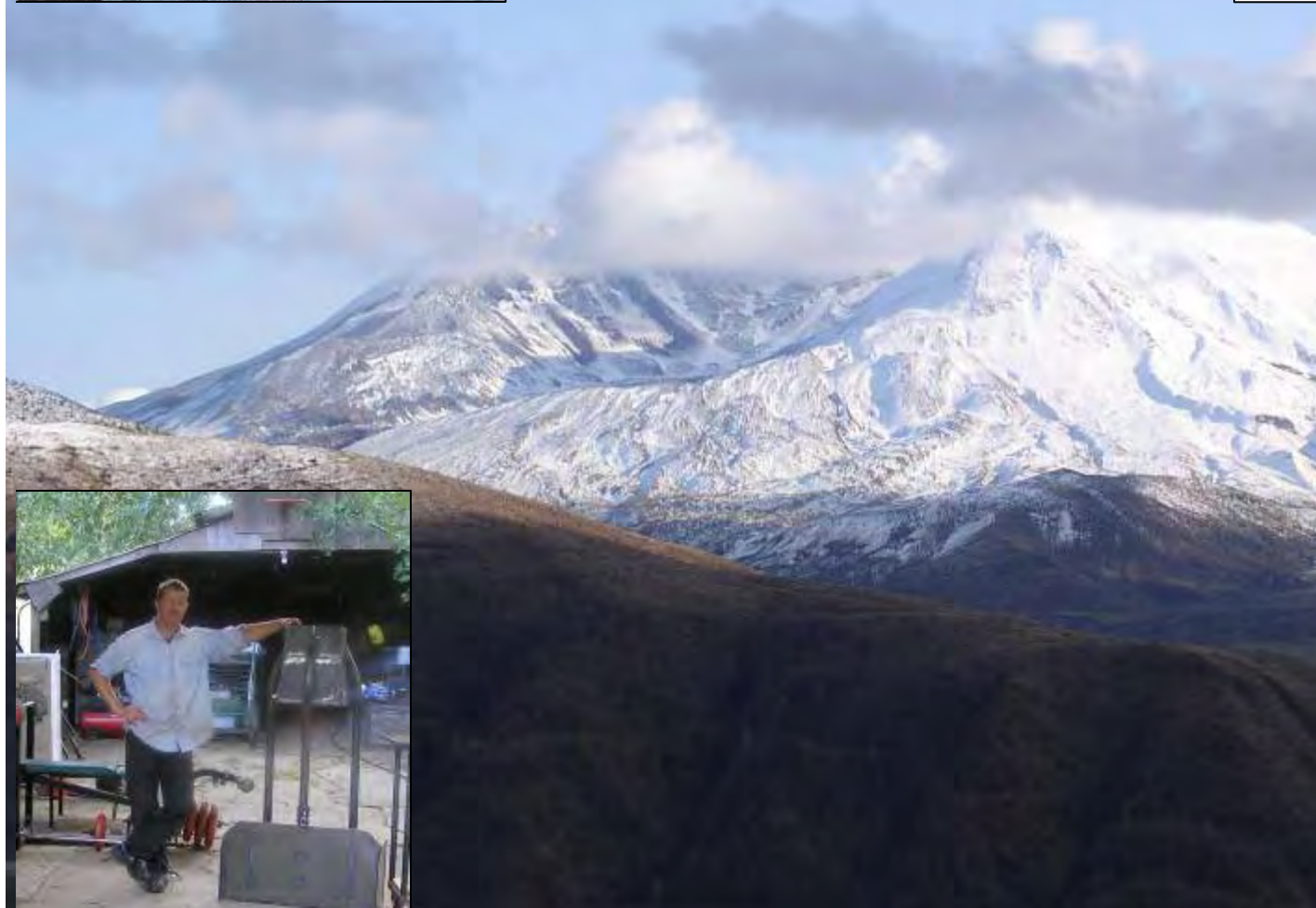
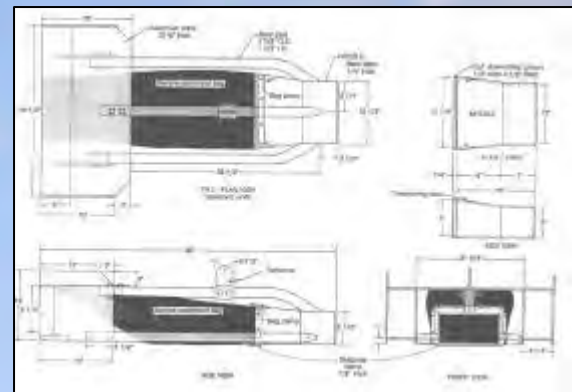












Two different TR-2 bedload samplers: Childers' USGS model (above) and Graham Matthews and Associates Trinity River model (below).



# Preliminary Results

- Summer 2007 vs. Summer 2008



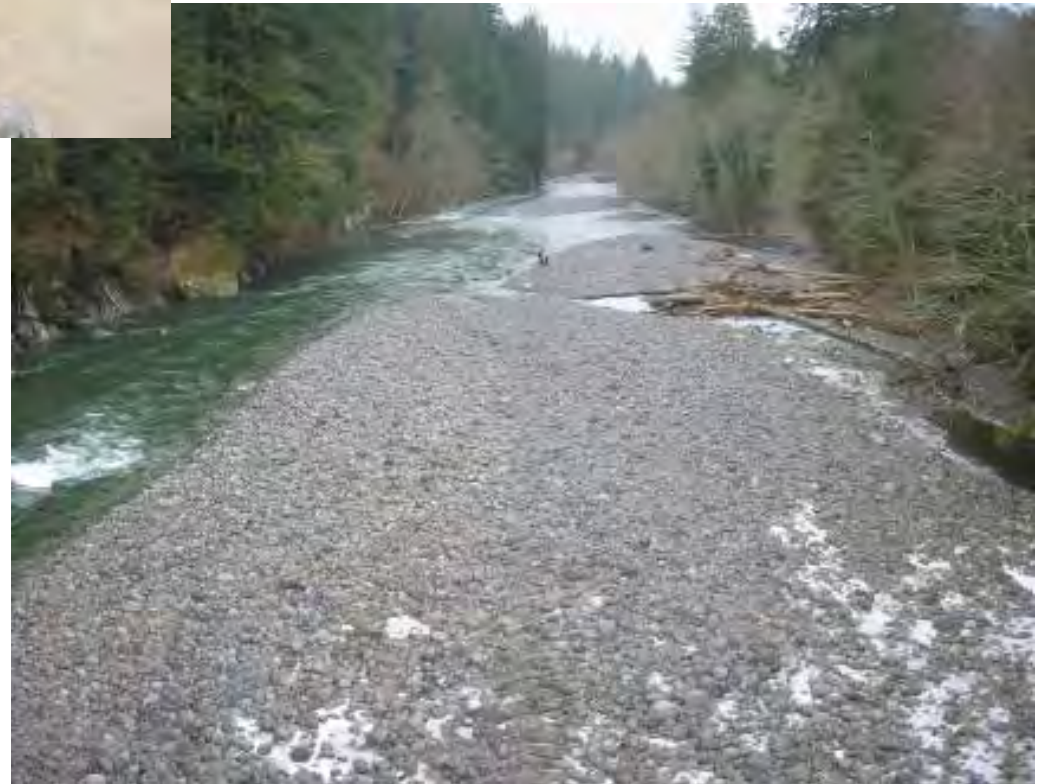










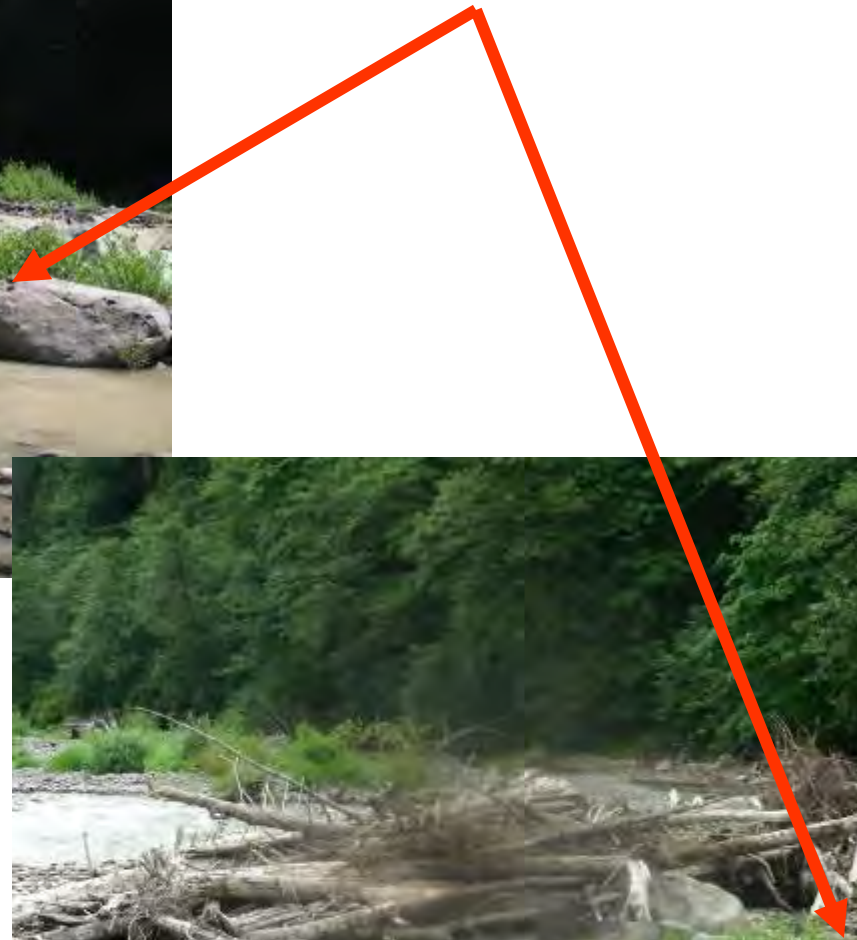


















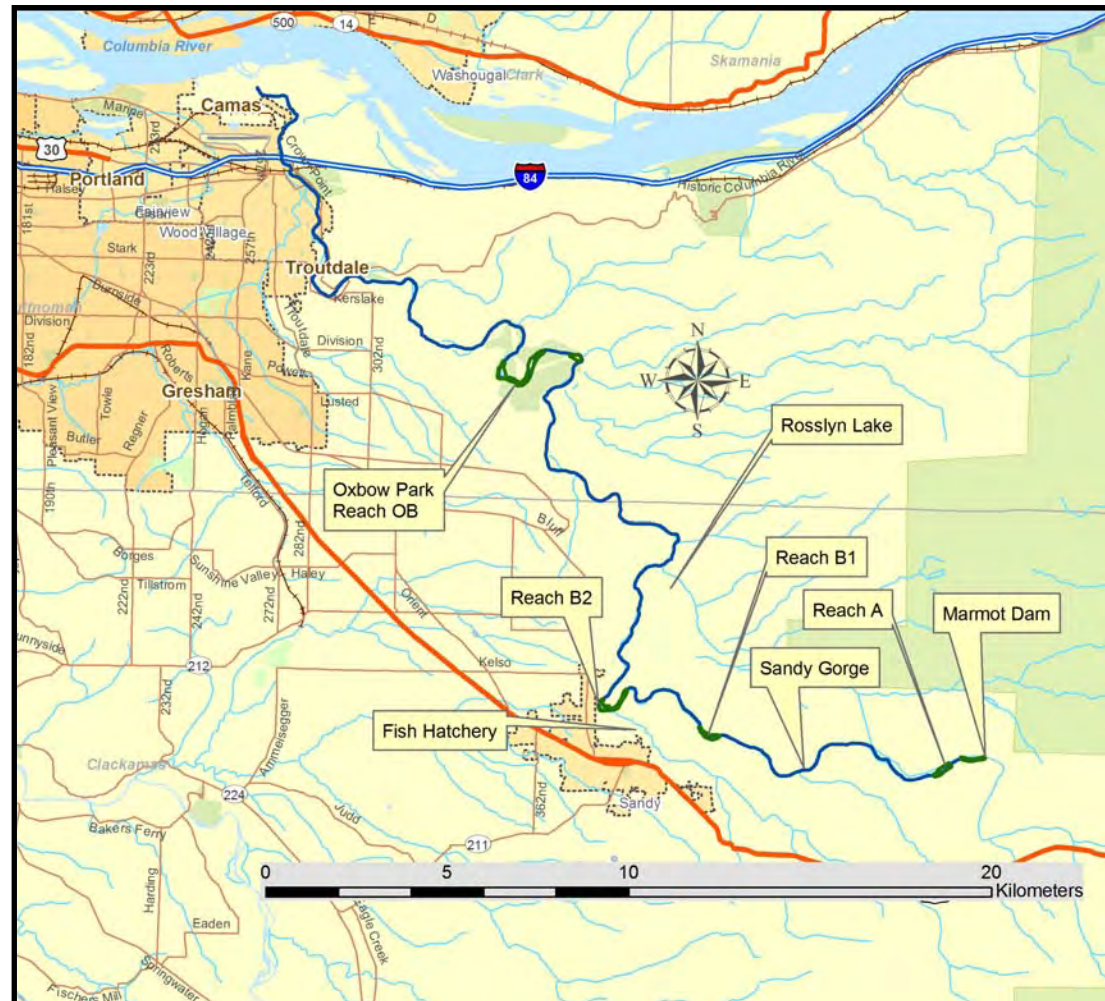
# Preliminary Results

- Summer 2007 vs. Summer 2008
  - Revenue Bridge
  - Cedar Creek
  - Oxbow Park
  
  - Some bars have slightly more sand
  - Some small (few feet) shifting around of bars
  - Nothing new (like 2006-2007 in Oxbow)



# Preliminary Results

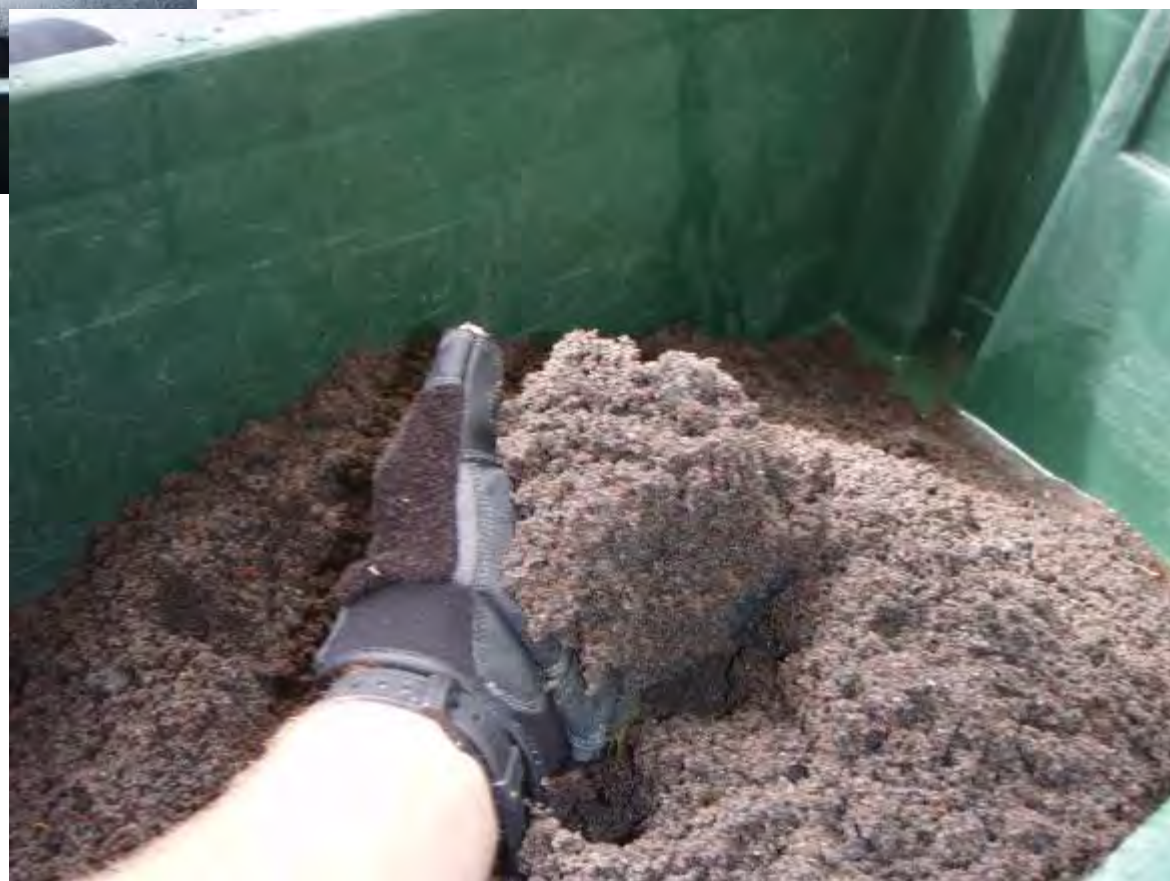
- Where is the sediment?





**Suspended Sediment Load:  
425,000 tons**

**Bedload: 160,000 Tons  
(85% sand)**







**Roughly Equivalent to half of what was stored behind the dam.**

**Smith River, California**

**(twice as big as the Sandy)**

**Average annual load is about a third of the  
Sandy's**

# What's Next

- GMA survey – August 2008
- JHU/NCED/GMA – July 2009
- BOR survey
- Ongoing USGS / OSU work upstream
- Sediment sampling – winter 2008-2009
  - Location – TBD – help please



# Acknowledgements

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  - National Center for Earth Surface Dynamics
  - US Forest Service
  - Oregon Watershed Enhancement Board

# For More

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